

WHAT IS CLAIMED:

1. A system for providing dynamic feedback control of network elements in a data network, the system comprising:

5 a plurality of network elements, each of said network elements having a plurality operating parameters associated therewith;

a first network portion, the first network portion being administered by a first network service provider;

the first network portion including a first plurality of network elements;

10 a data store system configured or designed to dynamically receive information related to a first subset of network elements, said first subset of network elements including at least one network element of the first plurality of network elements;

a policy engine system configured or designed to dynamically analyze at least a portion of said received information based upon selected guidelines to determine  
15 whether a performance of at least a portion of said network conforms with a predetermined criteria; and

said policy engine system being further configured or designed to automatically and dynamically report results of said analysis to an administration system for dynamically responding to said results when the performance of the  
20 portion of said network fails to conform with the predetermined criteria;

wherein the response is selected to dynamically alter a performance policy of the portion of the network to conform with the predetermined criteria; and

wherein the reporting is dynamically triggered by the performance of the portion of said network failing to conform with the predetermined criteria.

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2. The system of claim 1 wherein the predetermined criteria relates to a specified bandwidth use.

3. The system of claim 1 wherein the first portion of network elements  
30 includes a plurality of telecommunication switches administered by said first network service provider.

4. The system of claim 1 wherein said received information includes operating parameter information related to said first subset of network elements; and

wherein said analyzing includes analyzing at least a portion of said operating parameter information to determine whether a service quality of a portion of said network conforms with acceptable service level parameters.

5           5.       The system of claim 4 further including modifying a configuration of at least one network element in response to a determination that said service quality of said network portion does not meet a specified service level requirement, wherein the modification is selected so that the at least one network element is caused to meet the specified service level requirement.

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6.       The system of claim 5 wherein said at least one network element includes at least one network element of the first plurality of network elements.

15           7.       The system of claim 1 wherein the policy engine system is further configured or designed to analyze said information to determine billing information associated with a portion of said network.

20           8.       The system of claim 1 wherein the policy engine system is further configured or designed to analyze said information to detect any security violations related to a portion of said network.

25           9.       The system of claim 1 wherein the policy engine system is further configured or designed to analyze said information to evaluate a fault management performance of a portion of said network.

10           10.      The system of claim 1 wherein the policy engine system includes an first event handling component configured or designed to receive an event notification message relating to an error reported by a specific network element.

30           11.      The system of claim 10 wherein said specific network element corresponds to a network element administered by said first service provider; and  
            wherein the specific network element includes a second event handling component configured or designed to receive an event notification message relating to

an adjustment of at least one operating parameter associated with the specific network element.

12. The system of claim 10 further including suspending analysis of  
5 information related to said specific network element in response to reception of said error notification message.

13. The system of claim 1, wherein the policy engine is configured or  
designed to include at least one policy for analyzing information from said first subset  
10 of network elements, and dynamically generate updated element control parameters used to affect at least one aspect of network performance.

14. The system of claim 13 wherein said at least one network element of  
the first plurality of network elements is configured or designed to receive at least a  
15 portion of said updated element control parameters.

15. The system of claim 14 wherein said at least one network element is  
further configured or designed to automatically and dynamically adjust at least one  
associated operating parameter in response to receiving at least a portion of said  
20 updated element control parameters.

16. The system of claim 13 wherein the administration system is  
configured or designed to dynamically modify said policy in response to a  
determination that said policy is not effective in affecting said aspect of network  
25 performance to conform with said predefined performance criteria.

17. A method for providing dynamic feedback control of network elements  
in a data network, the data network including a plurality of network elements, each of  
said network elements having a plurality operating parameters associated therewith,  
30 the data network further comprising a first network portion, the first network portion  
being administered by a first network service provider, the first network portion  
including a first plurality of network elements, the method comprising:

dynamically receiving information related to a first subset of network elements, said first subset of network elements including at least one network element of the first plurality of network elements;

5 dynamically analyzing at least a portion of said received information based upon selected guidelines to determine whether a performance of at least a portion of said network conforms with a predetermined criteria; and

10 automatically and dynamically reporting results of said analysis to the administration system for dynamically responding to said results when the performance of the portion of said network fails to conform with the predetermined criteria;

wherein the response is selected to dynamically alter a performance policy of the portion of the network to conform with the predetermined criteria;

wherein the reporting is dynamically triggered by the performance of the portion of said network failing to conform with the predetermined criteria;

15 dynamically generating updated element control parameters used to affect at least one aspect of network performance;

providing at least a portion of said updated element control parameters to said at least one network element; and

20 automatically and dynamically adjusting at least one associated operating parameter at the at least one network element in response to receiving said updated element control parameters.

25 18. The method of claim 17 wherein the predetermined criteria relates to a specified bandwidth use.

19. The method of claim 17 wherein said received information includes operating parameter information related to said first subset of network elements, and wherein said analyzing includes analyzing at least a portion of said operating parameter information to determine whether a service quality of a portion of said  
30 network conforms with acceptable service level parameters.

20. The method of claim 19 further including modifying a configuration of said at least one network element in response to a determination that said service quality of said network portion does not meet a specified service level requirement,

wherein the modification is selected so that the at least one network element is caused to meet the specified service level requirement.

21. The method of claim 17 wherein said analyzing includes analyzing  
5 said information to determine billing information associated with a portion of said network.

22. The method of claim 17 wherein said analyzing includes analyzing  
said information to detect any security violations related to a portion of said network.

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23. The method of claim 17 wherein said analyzing includes analyzing  
said information to evaluate a fault management performance of a portion of said network.

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24. The method of claim 17 further including receiving an event  
notification message relating to an error reported by a specific network element of  
said first plurality of network elements.

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25. The method of claim 24 wherein said specific network element  
corresponds to a network element administered by said first service provider; and  
wherein the method further comprises receiving, at the specific network  
element, an event notification message relating to an adjustment of at least one  
operating parameter associated with the specific network element.

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26. The method of claim 24 further including suspending analysis of  
information related to said specific network element in response to reception of said  
error notification message.

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27. The method of claim 26 further including reporting said error to a  
system administrator of the first network portion.

28. The method of claim 17, wherein the network further including a  
policy engine having at least one policy for analyzing information from selected

network elements and dynamically generating updated element control parameters used to affect at least one aspect of network performance,

the method further comprising dynamically modifying said policy in response to a determination that said policy is not effective in affecting said aspect of network performance to conform with said predefined performance criteria.

29. The method of claim 28 further including reporting a non-effective policy evaluation to the system administrator of the first network portion.

30. The method of claim 29 further including receiving instructions from said system administrator for modifying said reported policy; and dynamically modifying said policy in accordance with said instructions.

31. A system for providing dynamic feedback control of network elements in a data network, the data network including a plurality of network elements, each of said network elements having a plurality operating parameters associated therewith, the data network further comprising a first network portion, the first network portion being administered by a first network service provider, the first network portion including a first plurality of network elements, the system comprising:

means for dynamically receiving information related to a first subset of network elements, said first subset of network elements including at least one network element of the first plurality of network elements;

means for dynamically analyzing at least a portion of said received information based upon selected guidelines to determine whether a performance of at least a portion of said network conforms with a predetermined criteria; and

means for automatically and dynamically reporting results of said analysis to the administration system for dynamically responding to said results when the performance of the portion of said network fails to conform with the predetermined criteria;

wherein the response is selected to dynamically alter a performance policy of the portion of the network to conform with the predetermined criteria;

wherein the reporting is dynamically triggered by the performance of the portion of said network failing to conform with the predetermined criteria;

means for dynamically generating updated element control parameters used to affect at least one aspect of network performance;

means for providing at least a portion of said updated element control parameters to said at least one network element; and

5 means for automatically and dynamically adjusting at least one associated operating parameter at the at least one network element in response to receiving said updated element control parameters.

10 32. The system of claim 31 wherein the predetermined criteria relates to a specified bandwidth use.

15 33. The system of claim 31 wherein said received information includes operating parameter information related to said first subset of network elements, and wherein said analyzing mean includes means for analyzing at least a portion of said operating parameter information to determine whether a service quality of a portion of said network conforms with acceptable service level parameters.

20 34. The system of claim 33 further including means for modifying a configuration of said at least one network element in response to a determination that said service quality of said network portion does not meet a specified service level requirement, wherein the modification is selected so that the at least one network element is caused to meet the specified service level requirement.

25 35. The system of claim 31 wherein said analyzing means includes means for analyzing said information to determine billing information associated with a portion of said network.

30 36. The system of claim 31 wherein said analyzing means includes means for analyzing said information to detect any security violations related to a portion of said network.

37. The system of claim 31 wherein said analyzing means includes means for analyzing said information to evaluate a fault management performance of a portion of said network.

38. The system of claim 31 further including means for receiving an event notification message relating to an error reported by a specific network element of said first plurality of network elements.

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39. The system of claim 38 wherein said specific network element corresponds to a network element administered by said first service provider; and

wherein the system further comprises means for receiving, at the specific network element, an event notification message relating to an adjustment of at least one operating parameter associated with the specific network element.

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40. The system of claim 38 further including means for suspending analysis of information related to said specific network element in response to reception of said error notification message.

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41. The system of claim 40 further including means for reporting said error to a system administrator of the first network portion.

42. The system of claim 31, wherein the network further including a policy means having at least one policy for analyzing information from selected network elements and dynamically generating updated element control parameters used to affect at least one aspect of network performance,

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the system further comprising means for dynamically modifying said policy in response to a determination that said policy is not effective in affecting said aspect of network performance to conform with said predefined performance criteria.

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43. The system of claim 42 further including means for reporting a non-effective policy evaluation to the system administrator of the first network portion.

44. The system of claim 43 further including means for receiving instructions from said system administrator for modifying said reported policy; and

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means for dynamically modifying said policy in accordance with said instructions.